
Electronic cigarettes in the media

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Electronic cigarettes (e-cigarettes) are an increasingly popular source of nicotine and an increasingly popular topic in the media. Concerns about potential hazards associated with e-cigarette use and advertising, especially to adolescents, have led to studies on e-cigarettes in both traditional media (TV, mail, print, and outdoor advertising) and social media (websites, social networking sites, blogs, and e-mails). This review presents a narrative description of available studies related to e-cigarettes in the media. These articles have focused on promotion in both traditional and social media across a broad range of topics and have concentrated on target audiences, smoking cessation, harm reduction, and advertising. E-cigarette advertising is the most frequent topic in the published articles. Identifying the target audience also is a common objective in articles. The representation of e-cigarettes as a “healthier alternative” to traditional cigarettes and their use as a “smoking cessation aid” are main themes presented through all types of media.

Electronic cigarettes (e-cigarettes) have been sold in the US market since 2007 (1). These devices are designed to simulate smoking by heating a nicotine-containing solution producing an inhaled aerosol; the health effects of long-term use are undefined. Sales are steadily increasing, and regulation of these devices is locale dependent with no standard policy in place. E-cigarette revenue was expected to increase to over \$1 billion in 2013 (2). New media outlets, such as Twitter and YouTube, have allowed the tobacco industry to expand target audiences, and e-cigarette companies have capitalized on this opportunity (3, 4). This has led to studies on the use of the media as an advertising tool and an information resource for e-cigarettes. This review presents a narrative description of available surveys and literature on e-cigarettes in multiple media sites. Critical issues include the media used, the audience, the size of the audience, the messages in the media, and the potential consequences of these messages.

METHODS

A PubMed search was performed for articles published from January 1, 2007, to January 31, 2016, using the following search terms within titles/abstracts: “electronic cigarette*,” “e-cig*,” “electronic nicotine delivery,” “electronic nicotine

delivery device*,” “ENDD,” “electric cigarette*,” “electric nicotine delivery,” and “electric nicotine delivery device*.” A total of 721 articles were found, and the titles were reviewed to identify potential articles relevant to media, defined as outlets for mass communication. This list was then reviewed for articles related to media. Twenty-seven articles were found, reviewed, and summarized.

RESULTS

The 27 relevant articles were reviewed for similarities and trends. Characteristics, such as media type, study type, population, date of study, harm reduction claims, and smoking cessation claims, were extracted and, if relevant, recorded in the *Table*. These studies analyzed both traditional and social media. Social media were defined as Internet, e-mail, mobile devices, blogging, or social networking sites; traditional media were defined as television, print, radio, direct mail, and outdoor signs. All studies were supported by governmental agencies, universities, or nongovernmental health-related organizations.

Ten of the 27 publications (35%) analyzed traditional media (television, newsprint, product placement, and packaging). Specifically, three articles (11%) studied product placement in retail stores, two articles (7%) focused on newspapers, one article (4%) focused on product packaging, and four articles (15%) considered television advertising. Fifteen publications reported on information from social media, including websites or online presence (seven articles, 26%), Twitter (four articles, 15%), and YouTube (four articles, 15%). Two publications considered all forms of media.

The publications were analyzed for common topics and themes. Most articles (22, 81%) discussed advertising; 8 articles (30%) concentrated on target audience. Other topics included smoking cessation (22%), harm reduction (15%), and prevalence/perception in the media (19%).

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Table. Description of articles addressing e-cigarettes in the media

Type of media	Study focus	Study description	Population	Conclusion
Social media				
Online	Advertising, audience (15)	Collection of online banner/video ads	—	30% price promotion; 35% youth as audience
Online	Advertising (28)	Views of online ads	3253 smokers	Interest in e-cig highest when viewing ads about differences from regular cigarettes
Online	Advertising, cessation, harm reduction (26)	Description of ad claims on retail websites	59 sites	88% claimed e-cigs could be smoked anywhere; 95% addressed harm reduction; 64% addressed cessation
Online	Advertising, cessation, harm reduction, audience (25)	Coding guide analysis	—	89% addressed harm reduction; 67%, cessation; targeted youth/women
Online	Target audience (17)	Online survey	17,522 adults in 2013	86% aware of products; 47% heard through media channels
Online	Prevalence/perception (30)	Online survey, questionnaire	4618 participants	Variability in flavors was very important to current e-cig smokers
Online	Advertising, cessation (5)	Survey data	1198 smokers 16 and older	Significant increase in noticing e-cig ads between 2013 and 2014
Twitter	Prevalence/perception in media (16)	Content analysis	7362 tobacco tweets	46% tweets positive
Twitter	Advertising, prevalence/perception, cessation (18)	Keywords in tweets related to e-cig	73,672 tweets; 90% commercial	Small group of highly active commercial accounts; 10% addressed cessation
Twitter	Advertising (31)	Twitter data analysis	1.7 million tweets 2008–2013	Most tweets were advertising (93%); e-cig tweets increased 10× from 2009 to 2010
Twitter	Advertising, cessation (17)	Twitter data survey	17,522 adults in 2013	US adults are widely exposed to e-cig marketing through the media
YouTube	Prevalence/perception in media (24)	Video data from YouTube	—	Puff duration longer in e-cig users
YouTube	Prevalence/perception, harm reduction (19)	Top 20 search results	196 videos	94% pro; 2% anti; 71.4% cessation
YouTube	Advertising (23)	Content analysis	365 videos	85% sponsored by market; highlight economic/social benefits
YouTube	Advertising, target audience (20)	Online survey on videos	2068 adolescents	E-cigs in 2% (95% CI, 0–4%)
Traditional media				
Television	Advertising, cessation, target audience (14)	Measurement of awareness and receptivity	519 adult smokers	Prior e-cig users more receptive; 74.6% of surveyed thought of cessation
Television	Advertising (12)	Analysis of Nielsen data	Youth	Exposure increased 256%; 76% on cable; ad for 1 brand
Television	Advertising (21)	Online survey	5020 youth	After exposure, youth perceived e-cigs as cooler, fun, healthier, and enjoyable
Television	Advertising (22)	Observational survey	296 students at US university	Students exposed to ads had positive reaction to the ads
Newsprint	Harm reduction (32)	Textual discourse analysis	478 news media articles	Rising presence in media; conflict over harm reduction vs. increased initiation
Newsprint	Prevalence/perception (10)	Thematic analysis	12 papers/3 web news	Increased coverage substantially
Product placement	Advertising (6)	Observational; descriptive study	Assessments in 320 retail stores	Availability more than doubled; presence of ad signs increased
Product placement	Advertising, target audience (7)	Observational	Audits of 108 stores	Not related to store size; trend toward increased availability in more deprived areas
Product placement	Advertising, target audience (9)	Observational; audits of retailers	Study 1, 2165; Study 2, 2526	Availability more likely in areas with weak tax and smoke-free air policies
Packaging	Advertising (11)	Randomized trial; view of print ads	483 nontobacco users	Graphic label depicting “low risk”
All media				
All media	Advertising, target audience (27)	Cross-sectional study	944 subjects	E-cig marketing beginning to breach African American population
All media	Advertising (33)	Observational study	1449 US adults	Discussion associated with lower perceived harm of second-hand vapor

DISCUSSION

The number of articles published on e-cigarette promotion in both traditional and social media has steadily increased since its introduction (5). Ten articles focused on traditional media. During the period from 2012 to 2013, the availability of e-cigarettes in retail stores more than doubled, with most retail stores selling the devices and with advertising closely resembling former tobacco industry market strategy (6–8). E-cigarette companies tend to place this product in stores in higher-income neighborhoods and in locations with smoke-free air regulations (9). Newspaper advertising strategy seems to focus on five similar themes: smoke-free legislation, risk and uncertainty, healthier choice, celebrity use, and price (10). Traditional tobacco products are required to place warning labels on their products. E-cigarette packaging, misleadingly, has placed labels claiming a low risk on their products (11). E-cigarette companies also advertise their products to an increasingly broad television audience, including youth, utilizing primarily national cable networks (12, 13). Commercial frequency increased 256% in the period from 2011 to 2013 (12, 13). With this increase in availability, there is an increase in public appearance and normalization of smoking behavior (7, 14).

Fifteen articles focused on social media and e-cigarettes. Over \$2 million is spent a year in e-cigarette advertising via media in the US and Canada alone (15). Twitter, an online social networking service with 302 million active users, is used as a marketing tool for manufacturers of e-cigarettes and other tobacco products with e-cigarette “tweets” increasing 10-fold from 2009 to 2010, 93% being advertising (16). E-cigarette companies have used tweets to promote their products’ use for cessation and to suggest decreased harm (17). These commercial accounts have been used heavily with the potential to reach millions of Twitter users. Tweets refer to cessation and offer discounts with direct links to commercial websites from which customers can purchase e-cigarettes (18).

YouTube, a video-sharing website with 4 billion video views per day, also offers unique insight into e-cigarette commercial opinions and advertising habits. Most videos depict e-cigarettes as a healthier option than traditional cigarettes or as being more socially acceptable or attempt to prompt branding (19, 20). Social acceptance is an important focus for e-cigarette manufacturers. One survey showed that people perceived e-cigarettes as healthier and “cooler” after watching advertisements (21). While no longitudinal studies are available to support the idea that e-cigarettes cause less harm than traditional cigarettes, up to 85% of videos referencing e-cigarettes are posted for promotion of the product, with information often discussing health and smoking cessation (22, 23). One YouTube article did attempt to study differences in smoking patterns in e-cigarette users compared with traditional cigarette smokers. These authors suggest that e-cigarette users inhale longer, possibly to compensate for the poor nicotine delivery system, but the clinical implications of this pattern, if any, are unclear (24). E-cigarette manufacturers use their own websites to promote e-cigarettes as having health benefits, producing no second-hand smoke, and being a viable option for cessation (25). Ninety-five percent of observed

manufacturer websites made explicit or implicit health-related claims, with 64% having a smoking cessation–related claim (26).

Marketing differentially targets specific audiences (17). Baumann et al presented a cross-sectional survey study given to hospitalized patients who were asked to recall their exposure to e-cigarette advertising over the past 6 months. This study showed that Caucasians were more aware of advertising efforts than African Americans and that both cohorts were increasingly exposed over time (27). E-cigarette use has historically been lower in African Americans, yet e-cigarette use has increased in both African Americans and Caucasians in the past decade, with Caucasian use remaining higher (27). Other studies have demonstrated that interest in e-cigarettes increases after exposing the target audience to visual images of their use or to advertising comparing e-cigarettes to traditional cigarettes (15, 28). Both never-smokers and current regular cigarette smokers were targeted as well as younger nonsmokers. Youth traditional cigarette smoking susceptibility has been directly linked to exposure through static advertising. Fulmer and associates recently reported that tobacco advertising in newspapers, magazines, and retail stores and screen tobacco images in television and movies increase tobacco use in a dose-dependent manner in US middle and high school students. In addition, the perception of peer use increases the likelihood of tobacco use in the students. E-cigarette companies have increased advertising to this audience through more use of social media (29).

More information on advertising methods and their effects on consumers would provide better understanding of e-cigarettes’ use and opportunities for public health officials to address health and access issues. Public health organizations should provide information to e-cigarette users and the public through these outlets and take a strong stance against their use, especially by school-aged children.

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